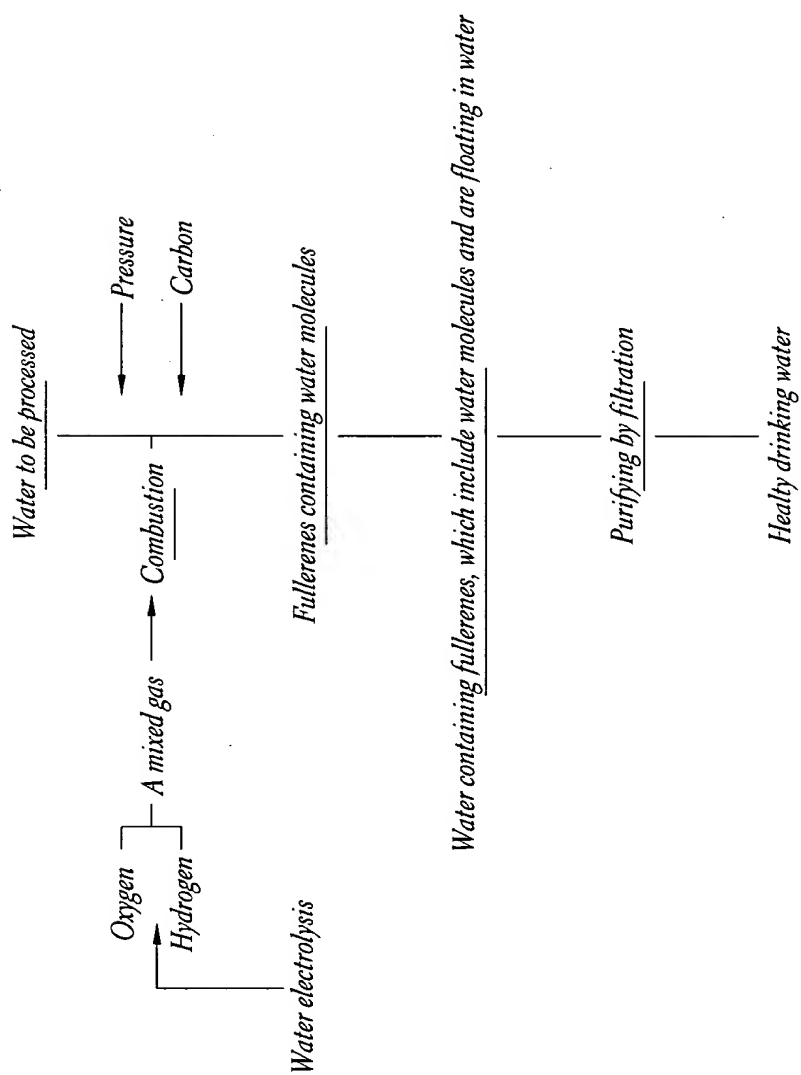


FIG. 1

A flow chart of producing water containing fullerenes



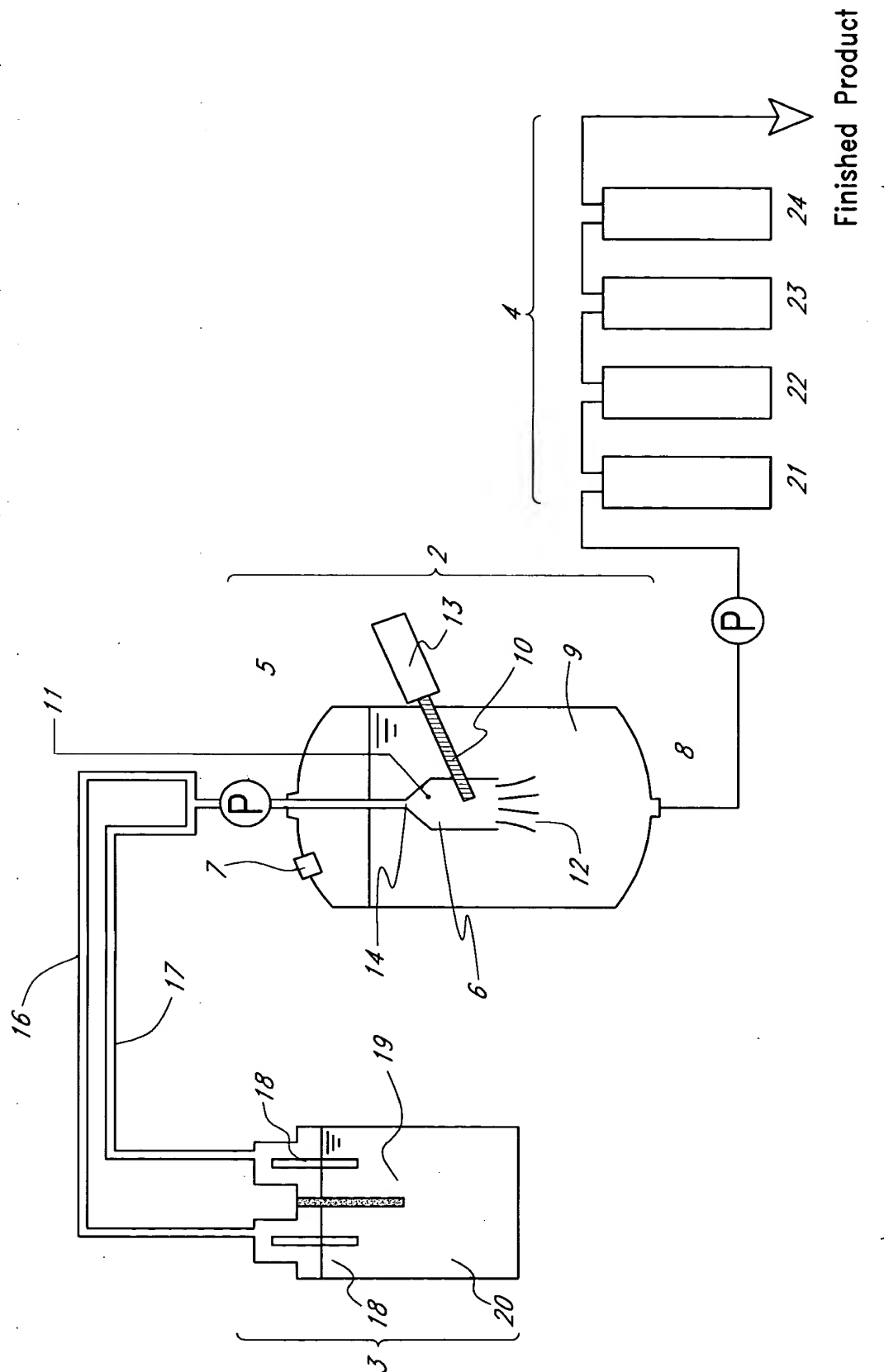


FIG. 2

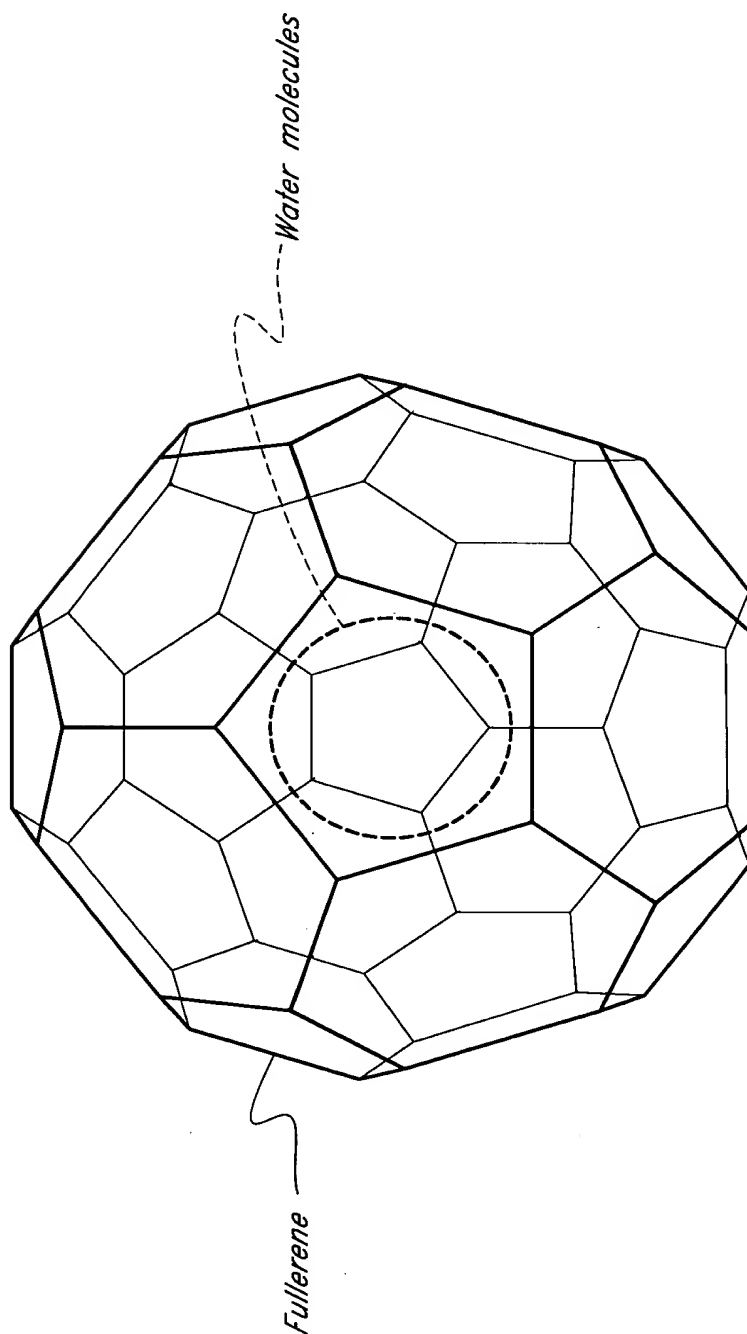


FIG. 3

FIG. 4

Various Properties of C_{60} (prepared based on a table from Chemistry, 46, 830, 1990)

Properties (Physical Quantity)	Measured Value, etc.	Properties (Physical Quantity)	Measured Value, etc.
• Molecular weight:	720.66	• Electron affinity:	2.65 ± 0.02 eV
• No. of molecules:	720	• Reduction potential ($E^{1/2}$ vs Fe/Fe^{2+}), acetone/nitrite/toluene, (Et ₄ N)	-0.98, -1.37, -1.87, -2.35, -2.85, -3.26 (V)
• Molecular structure:	Frustum icosahedron ($I_{h,n}$) Diameter: ~ 7.1 Å C-C bond shared by two six-membered rings 1.391 Å C-C bond forming a five-membered ring 1.455 Å $\delta = 143.27$ ppm	• BF ₃ (ligand), -10 °C: • Crystal structure:	Simple cubic system (249K or less) $P\alpha 3$, $Z=4$, $a=14.04$ Å (5K) Face-centered cubic system (249K or more) $Fm 3$, $z=4$, $a=14.17 \pm 0.01$ Å (300K) Distance between the center of adjacent molecules: ~ 10.0 Å
• ¹³ C-NMR spectrum (C_4D_8)		• Density	1.729 g/cm ³ (5K, calculated value) 1.682 g/cm ³ (300K, calculated value) (5.5 ± 0.5) $\times 10^{-2}$ GPa ⁻¹
• Infrared adsorption spectrum (KBr pellet)/cm ⁻¹	527.4, 576.4, 1182.4, 1428.5	• Compressibility (0~20 GPa):	> 700 °C
• Infrared emission spectrum (vapor-phase, 850 \pm 100 °C)/cm ⁻¹	527.1, 570.3, 1169.1, 1406.9	• Melting point:	~ 4.83 kJ/mol
• Raman spectrum (thin film)/cm ⁻¹	273(s), 437(m), 496(s), 710(m), 774(m), 1099(w), 1250(w), 1428(m), 1470(vs), 1575(m)	• Heat of transition (249K):	9.58 ± 0.31 kJ/mol
• Visible ultraviolet spectrum (hexane solution, log ϵ in parentheses)/nm:	211(5.11), 227(sh, 4.91), 256(5.24), 328(4.71), 390(3.52), 403(3.48), 492(sh, 2.72), 540(2.85), 568(2.78), 590(2.86), 598(2.87), 620(2.60)	• heat of sublimation:	$< 10^{-9}$ Scm ⁻¹
• Fluorescence spectrum (toluene solution, at room temp.)/nm	No observation (thin film, 20K), 706.7(main), 787.4, 877(sh)	• Conductivity (at room temp.):	$-(260 \pm 20) \times 10^{-6}$ emu/mol
• Triplet energy (toluene solution)	1.56 ± 0.03 eV (8.60 ± 0.14 kJ/mol)	• Molar magnetic susceptibility	K_3C_{60} (18), Rb_3C_{60} (28,30), Rb_2CsC_{60} (31), $RbCs_2C_{60}$ (33), K_2CsC_{60} (24), Na_2CsC_{60} (12), Na_2RbC_{60} (s.5), Na_2KC_{60} (2.5), Li_2CsC_{60} (12), Ca_2C_{60} (8.4), Sn_2C_{60} (12)
• Ionization potential	7.61 ± 0.02 eV	• Transition temp. of superconducting salt Tc/K:	
		• Curie temp. of ferromagnetic salt:	TDAE _{0.55} C ₆₀ 16.1K

*Curie temperature; Temperature at which a paramagnetic substance changes to a ferromagnetic substance when it is cooling down.

TDAE indicates tetrakis(dimethylamino)ethylene.

(Source; K. Tanigaki & others, Fullerene, Sangyo-tosho, Oct. 27, 1992, P.16)

